

ABSTRACT

The present invention relates to an apparatus and process for producing a thin organic film on a substrate using an ultrasonic nozzle to produce a cloud of micro-droplets in a vacuum chamber. The micro-droplets move turbulently within the vacuum chamber, isotropically impacting and adhering to the surface of the substrate. The resulting product has a smooth, continuous, conformal, and uniform organic thin film, when the critical process parameters of micro-droplet size, shot size, vacuum chamber pressure, and timing are well-controlled, and defects such as “orange peel” effect and webbing are avoided. The apparatus includes an improved ultrasonic nozzle assembly that comprises vacuum sealing and a separate, independent passageway for introducing a directed purging gas.